LOYOLA COLLEGE (AUTONOMOUS), CHENNAI – 600 034

M.Sc. DEGREE EXAMINATION – **COMPUTER SCIENCE**

SECOND SEMESTER – **APRIL 2022**

PCS 2505 – ADVANCED DATABASE MANAGEMENT SYSTEMS

Date: 20-06-2022 Dept. No. Max. : 100 Marks

Time: 09:00 AM - 12:00 NOON

PART – A **(10 x 2 = 20 Marks)**

Q. No **Answer ALL Questions**

1 Define Snapshot.

2 What is the cardinality of a relation?

3 What is relational calculus?

4 Illustrate rename operation.

5 Define Relationship set.

6 What are subclasses?

7 What is a determinant?

8 Differentiate dense and sparse indices.

9 Mention the usage of log records.

10 Define Query tree.

PART – B **(5 x 8 = 40 Marks)**

Answer ALL the Questions

11 (a) Describe the categories of data models.

(Or)

(b) Explain the three schema architecture with a neat diagram.

12 (a) Describe Tuple relational calculus with examples.

(Or)

(b) Explain Unary relational operations with examples.

13 (a) Describe the different types of attributes with examples.

(Or)

(b) Describe Generalization with its constraints using a neat diagram.

14 (a) Explain the need for normalization.

(Or)

(c) Elaborate on primary indexes with diagrams.

15 (a) Elucidate the importance of concurrency control.

(Or)

(b) Illustrate state transition diagram with the states for transaction execution.

PART – C **(2 x 20 = 40 Marks)**

Answer any TWO Questions

16. (a) Describe the component modules of a DBMS and their interactions with a neat diagram.
(b) Elaborate the relational algebra operations from set theory with examples.

17. (a) Explain conceptual data modeling using entities and relationships.
(b) Describe 1NF, 2NF and 3 NF normal forms with focus on decomposition of relations.

18. (a) Describe the desirable properties of transactions.
(b) Elucidate the process of translating SQL queries into relational algebra.

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